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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* YANG WANG

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Appeal 2009-0574  
Application 10/084,917  
Technology Center 2400

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Decided:<sup>1</sup> March 26, 2009

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Before JOSEPH F. RUGGIERO, ROBERT E. NAPPI, and  
MARC S. HOFF, *Administrative Patent Judges*.

RUGGIERO, *Administrative Patent Judge*.

DECISION ON APPEAL

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<sup>1</sup> The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, begins to run from the decided date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

## STATEMENT OF THE CASE

Appellant appeals under 35 U.S.C. § 134 from the Final Rejection of claims 1-6, 8-14, 16, 17, and 19-27. Claims 7, 15, and 18 have been canceled. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

Rather than reiterate the arguments of Appellant and the Examiner, reference is made to the Brief (filed April 27, 2007) and Answer (mailed August 8, 2007) for the respective details. Only those arguments actually made by Appellant have been considered in this decision. Arguments which Appellant could have made but chose not to make in the Brief have not been considered and are deemed to be waived. *See* 37 C.F.R. § 41.37(c)(1)(vii).

### *Appellant's Invention*

Appellant's claimed invention relates to a router system which implements a plurality of virtual routers which share various combinations of routing resources. The plurality of virtual routers are configured to share the routing resources according to a programmably modifiable resource sharing configuration. (Spec. ¶¶ [0008]-[0011]).

Claim 1 is illustrative of the invention and reads as follows:

1. A routing system comprising:

a plurality of routing resources; and

a plurality of virtual routers configured to share the routing resources in accordance with a programmably modifiable resource sharing configuration.

*The Examiner's Rejections*

The Examiner's Answer cites the following prior art references:

Ylonen	US 2002/0062344 A1	May 23, 2002 (filed Sep. 11, 1998)
Alfieri	US 2002/0099849 A1	Jul. 25, 2002 (filed Oct. 19, 2001)
Shafer	US 2002/0198974 A1	Dec. 26, 2002 (filed May 31, 2001)
Ayres	US 6,687,220 B1	Feb. 3, 2004 (filed Sep. 28, 1999)

Claims 1-5, 16, 17, 19-21, 23, and 27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ayres in view of Shafer.

Claims 8-14 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Alfieri in view of Shafer.

Claims 1 and 2 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ylonen in view of Shafer.

Claims 6, 22, and 24-26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ayres in view of Shafer and Alfieri.

ISSUE

*Under 35 U.S.C. § 103(a), with respect to appealed claims 1-6, 8-14, 16, 17, and 19-27, would one of ordinary skill in the art at the time of the invention have found it obvious to combine Shafer in separate combinations with Ayres, Alfieri, and Ylonen to render the claimed invention unpatentable?*

The pivotal issue before us is whether Appellant has demonstrated that the Examiner erred in determining the obviousness to the ordinarily skilled artisan of applying the programmably modifiable network router

system shared resource configuration teachings of Shafer to the shared resource virtual router systems of each of Ayres, Alfieri, and Ylonen.

## FINDINGS OF FACT

The record supports the following findings of fact (FF) by a preponderance of the evidence:

1. Shafer discloses (¶¶ [0004] and [0029]) a network router management interface which processes requests to change router configuration to enable more efficient use of shared system resources.
2. Ayres discloses a routing system 20 (Figs. 1 and 2, col. 5, ll. 23-62) which includes virtual routers 50 and 52 which share system resources such as communication interface 40, shared buffer memory 46, and CPU 44.
3. Ayres further discloses (col. 2, ll. 18-33) that the virtual routers 50 and 52 each have their own independent router domain with independent adjustment of the ingress data queues 48 associated with the virtual routers.
4. Further disclosed (col. 9, l. 31 to col. 10, l. 6) by Ayres is a memory manager 53 which allocates shared system memory resources to the ingress data queues 48 associated with the virtual routers 50 and 52.
5. Alfieri discloses (Fig. 2) a routing system 14 which includes a virtual backbone router 22 and a plurality of virtual regional routers 20.
6. Alfieri further discloses (¶¶ [0033] - [0037]) that changes can be made to the router system configuration to allocate shared router system resources.

7. Ylonen discloses (Fig. 1b and ¶ [0004]) a router system which includes virtual routers 110-112 which share router system resources including processor 116.

#### PRINCIPLES OF LAW

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. *See In re Fine*, 837 F.2d 1071, 1073 (Fed. Cir. 1988). In so doing, the Examiner must make the factual determinations set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966) (stating that 35 U.S.C. § 103 leads to three basic factual inquiries: the scope and content of the prior art, the differences between the prior art and the claims at issue, and the level of ordinary skill in the art). “[T]he examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability.” *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). Furthermore,

‘there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness’ . . . [H]owever, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.

*KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 127 S. Ct. 1727, 1741 (2007) (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

Also, “[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable

results.”” *Leapfrog Enter., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1161 (Fed. Cir. 2007) (quoting *KSR*, 127 S. Ct. at 1739). “One of the ways in which a patent’s subject matter can be proved obvious is by noting that there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent’s claims.” *KSR*, 127 S. Ct. at 1742.

## ANALYSIS

### I. THE REJECTION OF CLAIMS 1-5, 16, 17, 19-21, 23, and 27 BASED ON THE COMBINATION OF AYRES AND SHAFER.

#### *Claims 1-4*

With respect to the Examiner’s obviousness rejection of independent claim 1 based on the combination of Ayres and Shafer, Appellant’s arguments in response assert a failure by the Examiner to establish a prima facie case of obviousness since all of the claimed limitations are not taught or suggested by the applied prior art references. Appellant’s arguments initially focus on the alleged deficiency of Ayres in disclosing a network with virtual routers that share routing resources in accordance with a “programmably modifiable resource sharing configuration” as claimed. According to Appellant (Br. 5-6), Ayres is concerned with adjusting the flow rate of data packets input to the virtual routers, but the various resources shared by the virtual routers in Ayers are fixed and not programmably modifiable. Appellant further contends (Br. 7) that, while Shafer, unlike Ayres, discloses a network system with a router management interface used to programmably configure shared router resources, Shafer does not disclose

that the interface can be used to configure *virtual* routers that share system resources.

We do not find Appellant's arguments to be convincing of any error in the Examiner's stated position (Ans. 3, 11, and 12). While Appellant contends that Ayres has no disclosure of programmably modifying a shared resource configuration in a network router system, this teaching is provided by Shafer (*see FF 1*). Similarly, while Appellant argues that Shafer does not disclose a network system in which resources are shared among virtual routers, such a disclosure is present in Ayres (*see FF 2*). It is apparent from the Examiner's line of reasoning in the Answer that the basis for the obviousness rejection is the combination of Ayres and Shafer. One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. *In re Merck & Co., Inc.*, 800 F.2d 1091, 1096 (Fed. Cir. 1986); *In re Keller*, 642 F.2d 413, 425 (CCPA 1981).

We also find, contrary to Appellant's arguments (Br. 6-7), that the Examiner (Ans. 3 and 12) has set forth an articulated line of reasoning which establishes that the programmably modifiable shared router resource configuration teachings of Shafer would have served as an obvious enhancement to the shared resource virtual router network system of Ayres. According to *Leapfrog*, when a combination of familiar elements according to methods known to the skilled artisan achieves a predictable result, it is likely to be obvious. *Leapfrog*, 485 F.3d at 1161.

We also find that, while Appellant contends (Br. 5) that Ayres is primarily concerned with adjusting the flow rate of packets, i.e., through the

operation of flow manager 54 (col. 6, ll. 7-15), that are input to the virtual routers, Ayres also discloses a memory manager 53. As described by Ayres (*see FF 4*), the memory manager 53 monitors the ingress data queues 48 of the virtual routers 50 and 52 and increases or decreases the amount of memory, i.e., a router system resource, allocated to the ingress data queues. The further disclosure by Ayres (col. 9, l. 64 to col. 10, l. 6) of the memory manager 53 operation suggests that the memory allocation adjustments are based on programmably modifiable factors such as quality of service (QOS) factors and user profiles maintained by the service provider 22.

With the above discussion of the Ayres reference in mind, we make the observation that, although the Examiner has relied upon Shafer for a teaching of programmably configuring shared network router resources, such a teaching is cumulative to what is already disclosed by Ayres. Accordingly, in view of the above analysis of the disclosure of the Ayres reference, we find that all of the elements of independent claim 1 are in fact present in the disclosure of Ayres. Further, we find that Shafer supplements Ayres's teachings to establish the Examiner's *prima facie* case for the claims being obvious over the combination of those references. Therefore, it is our view that the Examiner did not err in concluding that the combination of Ayres and Shafer renders the cited claims unpatentable.

For the above reasons, since it is our opinion that the Examiner has established a *prima facie* case of obviousness which has not been overcome by any convincing arguments from Appellant, the Examiner's 35 U.S.C. § 103(a) rejection of independent claim 1, as well as dependent claims 2-4 not separately argued by Appellant, is sustained.

*Claims 5, 23, and 27*

We also sustain the Examiner's obviousness rejection of dependent claim 5 and independent claim 23 (and its dependent claim 27), which particularly identify the routing resources recited in independent claim 1 as including routing processes, forwarding processes, control resources, and data resources. We find no error, and there are no arguments from Appellant which persuade us of any error, in the Examiner's detailed analysis (Ans. 13) which finds that the identified portions of the system illustrated in Figure 3 of Ayres (including the router 20, the communications interface 40, and the CPU 44) correspond to the claimed processes and resources.

*Claims 16, 17, 19, and 21*

The Examiner's obviousness rejection of independent claim 16, as well as of dependent claims 17, 19, and 21, which are not separately argued, is also sustained. Independent claim 16 is similar to previously discussed independent claim 1 but includes a further limitation directed to the allocation of a first set and a second set of resources as, respectively, shared and non-shared resources.

We do not find Appellant's arguments (Br. 10-11) to be persuasive in convincing us of any error in the Examiner's stated position (Ans. 5, 14, and 15). We agree with the Examiner's initial finding (*see* FF 2) that the plural virtual routers 50 and 52 in Ayres are allocated a first set of shared resources including the CPU 44, the interface 40, and the buffer memory 46. We similarly agree with the Examiner that Ayres also discloses the allocation of

a second set of non-shared resources since, as described by Ayres (*see FF 3*), each the virtual routers has its own routing domain and the flow rates of the ingress data queues associated with each of the virtual routers are independently adjusted.

*Dependent claim 20*

As previously discussed with respect to dependent claim 5, we find no error in the Examiner’s finding of correspondence of the operation of the communication interface 40 of Ayres and the router 20 with, respectively, the claimed routing and forwarding logic resources. Accordingly, the Examiner’s obviousness rejection of dependent claim 20 based on the combination of Ayres and Shafer is sustained.

**II. THE REJECTION OF CLAIMS 8-14 BASED ON THE COMBINATION OF ALFIERI AND SHAFER.**

*Claims 8-11, 13, and 14*

The Examiner’s obviousness rejection of independent claim 8, and dependent claims 9-11, 13, and 14, which are not separately argued, is sustained. Independent claim 8 is similar to previously discussed independent claim 1 except that it includes limitations which specifically identify the virtual routers as including a “backbone” router and a “regional” router.

We find no error in the Examiner’s identification (Ans. 8) of the routers VBR 22 and VAR 20 in Alfieri as corresponding to the claimed backbone and regional routers (*see FF 5*). Further, as previously discussed

with regard to the Ayres reference, while the Examiner has relied upon Shafer as providing a teaching of configuring shared network router resources, this teaching is cumulative to what is already disclosed by Alfieri. For example, Alfieri discloses (¶ [0035]) the desirability of programmably changing the configuration of shared router resources in a network router system (*see* FF 6). In any case, we find no convincing arguments from Appellant which convince us of any error in the Examiner's finding (Ans. 8 and 16) that the programmably modifiable shared router resource configuration teachings of Shafer would have served as an obvious enhancement to the shared resource virtual router network system of Alfieri.

*Dependent claim 12*

The Examiner's obviousness rejection of claim 12, based on the combination of Alfieri and Shafer, is also sustained. We agree with the Examiner, Appellant's arguments to the contrary notwithstanding, that Alfieri discloses (¶¶ [0032] and [0037]) the routing and forwarding processes as claimed. As explained by the Examiner (Ans. 16-17), the OSPF task 60 in Alfieri performs a routing process in the form of a routing table update and the virtual access routers (VARs) 20 and virtual interfaces (VIs) 30 share forwarding resources within router 14.

**III. THE REJECTION OF CLAIMS 1 and 2 BASED ON THE COMBINATION OF YLONEN AND SHAFER.**

We find no error in the Examiner's application (Ans. 10, 11, and 17) of the programmably modifiable shared resource teachings of Shafer to the

shared network virtual router system of Ylonen. Accordingly, the Examiner's obviousness rejection, based on the combination of Ylonen and Shafer, of independent claim 1, and dependent claim 2, which is not separately argued, is sustained. Appellant's arguments (Br. 17-19) reiterate the arguments, which we found to be unpersuasive *supra*, made against the Examiner's application of Shafer to Ayres and Alfieri.

**IV. THE REJECTION OF DEPENDENT CLAIMS 6, 22, AND 24-26 BASED ON THE COMBINATION OF AYRES, SHAFER, AND ALFIERI.**

This rejection is also sustained. Appellant (Br. 19) has made no separate arguments for patentability of these claims but, rather, relies on the arguments, which we previously found to be unpersuasive, asserted with respect to claim 1.

**CONCLUSION OF LAW**

Based on the findings of facts and analysis above, we conclude that Appellant has not shown that the Examiner erred in rejecting appealed claims 1-6, 8-14, 16, 17, and 19-27 for obviousness under 35 U.S.C. § 103.

**DECISION**

The Examiner's 35 U.S.C. § 103 rejection of claims 1-6, 8-14, 16, 17, and 19-27, all of the appealed claims, is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

Appeal 2009-0574  
Application 10/084,917

AFFIRMED

babc

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